Area Forecast Discussion: Bandar Abbas International Airport, Iran and Karachi, Pakistan
Date: Tuesday 09 April 2019
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Big Picture Perspective

During the next 10 days, the blocking high currently between Greenland and Norway will finally start propagating eastward towards western Russia. The polar jet stream no longer being confined to the giant ridge allows a return to more normal ridges over the western Mediterranean and troughs over Turkey and Middle East. The Northerly flow on the eastern side of the cut off anticyclone will allow deep troughs to form over much of Russia in the medium and extended range forecasts. The strong zonal subtropical jet across Africa will help short lived deep convection to develop in the Persian Gulf and over Saudi Arabia during the medium range forecast. A cyclone is forecasted to develop during the extended range over Iran due to a trough in the polar jet stream propagating under the ridge.

Extended Range: Day 7-10

The cyclone that developed in the medium range continues to propagate eastward throughout the Middle East. As the low crosses mountainous terrain east of Saudi Arabia it begins to weaken but is strengthened again by a coupled jet system. Moisture flux from the Arabian Sea continues to feed into the system fueling the precipitation in the region. Forecasted continuous precipitation in the Middle East creates anomalously wet conditions. This precipitation could add to current flooding that has been occuring in Iran and Pakistan. Colder than average temperatures associated with the short-wave trough dominates the extended range forecast.

Medium Range: Day 4-6

A strong jet develops over Northern Africa due to a strong temperature gradient as shown on the dynamic tropopause and theta-e plot. Knowing there is a strong theta-e gradient means there is a strong temperature gradient and therefore strong wind. This strong jet, stretching towards the middle east, is far removed from high values of precipitable water causing low moisture advection. However, a low pressure system is developing in the poleward exit region of the jet over Saudi Arabia as indicated by the irrotational wind pattern towards the end of the period. With southerly wind on the

eastern side of the cyclone, moisture from the Arabian Sea becomes fed into the system bringing precipitation throughout the region.

Short Range: Day 0-3

While a trough in the polar jet streak in eastern Russia digs down towards Mongolia, the middle east will be guarded by a ridge in western Russia and general height increases in Iran and Afghanistan causing an anticyclone over the Arabian Sea. The southerly winds on the western half of the anticyclone will increase the onshore flow into Iran and Pakistan, creating positive 2.5 sigma precipitable water values. The mechanical lift from the mountains in northern Pakistan will be enough to cause precipitation, but on the coast, the high surface pressure and lack of forced lift will keep Karachi dry throughout the period with slightly higher than normal temperatures. Bandar Abbas will also have anomalously high precipitable water values due to moisture transport from both the Red Sea and Persian Gulf. Instability from diurnal heating and small blobs of vorticity will provide enough lift to create precipitation towards the end of the period, but Bandar Abbas will stay dry other than that with near climatological temperatures..

Probabilistic Forecast

Bandar Abbas International Airport, Iran:
Day 0-3:
Max Temp: 30ºC (10th), 32ºC (50th), 35ºC (90th)
Min Temp: 20ºC (10th), 21ºC (50th), 23ºC (90th)
Precip: 0 mm (10th), 1 mm (50th), 3 mm (90th)

Day 4-6:
Max Temp: 26ºC (10th), 28ºC (50th), 29ºC (90th)
Min Temp: 18ºC (10th), 20ºC (50th), 21ºC (90th)
Precip: 0 mm (10th), 2 mm (50th), 3 mm (90th)

Day 7-10:
Max Temp: 29ºC (10th), 31ºC (50th), 34ºC (90th)
Min Temp: 19ºC (10th), 21ºC (50th), 22ºC (90th)
Precip: 0 mm (10th), 1 mm (50th), 2 mm (90th)

Karachi, Pakistan:
Day 0-3:
Max Temp: 32ºC (10th), 33ºC (50th), 34ºC (90th)

Min Temp: 23ºC (10th), 24ºC (50th), 25ºC (90th)
Precip: 0 mm(10th),3 mm (50th),5 mm (90th)

Day 4-6:
Max Temp: 28ºC (10th), 29ºC (50th), 30ºC (90th)
Min Temp: 24ºC (10th), 23ºC (50th), 24ºC (90th)
Precip: 0 mm (10th), 1 mm (50th), 4 mm (90th)

Day 7-10:
Max Temp: 30ºC (10th), 32ºC (50th), 33ºC (90th)
Min Temp: 23ºC (10th), 24ºC (50th), 25ºC (90th)
Precip: 0 mm (10th), 0 mm (50th), 2 mm (90th)